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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,339	10/16/2001	Nobuko Okada	110891	1640

25944 7590 09/03/2003

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/977,339	OKADA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	LAM S NGUYEN	2853	✓

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeoshi et al. (US 5157411) in view of Van Vooren et al. (US 6126273).

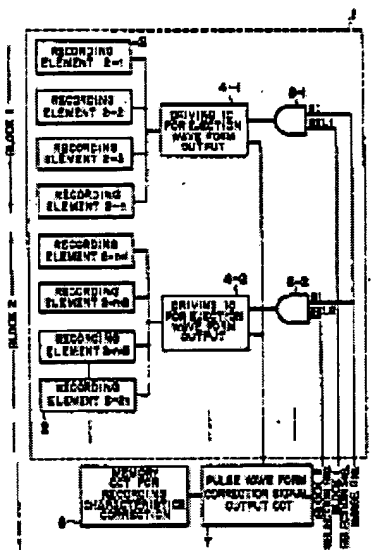
Takeoshi et al. disclose an ink jet recording apparatus comprising a plurality of nozzles for discharging a functional liquid (column 3, line 56-62: a full-multi-ink-jet head having a plurality of nozzles for discharging ink),

wherein said plurality of nozzles (FIG. 1: a corresponding nozzle for each RECORDING ELEMENT) is divided into a plurality of groups (in term of "block") the number of which is fewer than the number of said nozzles (FIG. 1), wherein each group contains nozzles located next to each other (FIG. 1: nozzles corresponding to RECORDING ELEMENT 2-1 to RECORDING ELEMENT 2-n located next to each other or FIG.2: nozzles corresponding to recording elements 1-4 in block B1 are located next each other),

wherein discharge quantity and flight speed of said functional liquid discharged from said nozzles is regulated for each group (FIG. 1: each block of recording elements is activated by different waveforms to eject droplets having different quantity. Since droplets with different quantity fly in different speed, the flight speed of droplets are also regulated) by a voltage applied to printing elements (column 4, line 23-41).

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Referring to claims 2-4: The limitations “wherein said functional liquid is ink that is usable to manufacture a color filter”, “said functional liquid is a solution of electroluminophor



that is usable to manufacture an EL element substrate”, or “wherein said functional liquid is an electrically conducting particle dispersion solution that is usable to manufacture a substrate comprising a conducting wiring pattern” are noted but not given patentable weight because it is well settled that material or article worked upon does not limit apparatus claims. See Ex parte Thibault, 164 USPQ 666, 667, (Bd. App. 1969) (“Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim.”) or In re Young, 25 USPQ 69 (CCPA 1935) (as restated in In re Otto, 136 USPQ 458, 459 (CCPA 1963) (“Inclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims.”). (MPEP 2115 Material or Article Worked Upon by Appartus).

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**Referring to claims 5, 8:** wherein positions on ink jet head on which said plurality of nozzles is arranged are divided into a plurality of areas, and nozzles belonging to each area are made to belong to a single group (column 3, line 56-62: group of nozzles corresponding to group of recording elements in FIG. 1 belongs to each area corresponding to the middle part and end parts of the full line head).

**Referring to claims 6, 9:** wherein said ink jet head on which said plurality of nozzles is arranged comprises cavities provided for each of nozzles, a reservoir communicating to said cavities and common to said nozzles, and a supply port for supplying said functional liquid to said reservoir (These limitations are well known in the structure of a jet head; For example, Imanaka et al. (US 6409300) (FIG. 9) disclose a structure of a jet head having cavities 2020 provided for each of nozzles 400, a reservoir 2010 communicating to said cavities and common to said nozzles, and a supply port 2040 for supplying said functional liquid to said reservoir); and wherein said plurality of groups comprise at least a first group comprising nozzles of said plurality of nozzles positioned close to said supply port, and a second group comprising nozzles of said plurality of nozzles positioned far from said supply port (column 3, line 56-63: the ink supply paths of groups of nozzles corresponding to the middle part or the end parts of a jet head are different in distance).

**Referring to claims 7, 10-12:** wherein discharging of said functional liquid into pixels formed on a substrate (column 3, line 58: an ink-jet head ejects ink drops to form image on a substrate such as printing medium). In addition, it is well known in the art that an ink jet method is used to jet a functional liquid to form a substrate such as an electro-optical apparatus. For

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example, Yayaoi et al. (JP-11-160528) disclose a device and a method which can manufacture a color filter by an inkjet method.

Takehoshi et al. do not disclose wherein printing elements are piezoelectric elements used to eject functional liquid through corresponding nozzles when a voltage level is applied to.

Van Vooren et al. disclose an ink jet recording apparatus having printing elements that are piezoelectric elements used to generate a pressure in an liquid chamber to eject functional liquid through corresponding nozzles when a voltage level is applied to (FIG. 6B and column 6, line 34-37).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the print apparatus disclosed by Takekoshi et al. such that using piezoelectric elements as discharging generators as disclosed by Van Vooren et al. The motivation of doing so is to achieve the advantages of piezoelectric inkjet over thermal inkjet such as no thermal cycling, easy control drop size, higher ink independence, and more repeatable performance as taught by Van Vooren et al. (column 6, line 34-38).

### ***Response to Arguments***

Applicant's arguments filed 06/27/2003 have been fully considered but they are not persuasive.

**Regarding to the argument on page 6, second paragraph:** The applicants argued that Takeshi et al. fail to disclose controlling flight speed of the functional liquid such that the impact position of the functional liquid on the substrate is not displaced even when moving the

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mounting table at higher speed. However, this feature is not included in the claimed language.

Therefore, the argument is not persuasive.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342.

The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (703)308-4896. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

W

August 22, 2003

  
Stephen D. Meier  
Primary Examiner